



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: TAKEI ET. AL.

EXAMINER: MARC S. ZIMMER

SERIAL NO: 10/667,671

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FILED: SEPTEMBER 23, 2003 : GROUP ART UNIT: 1712

FOR: HEAT-CONDUCTIVE SILICONE RUBBER COMPOSITE SHEET

DECLARATION UNDER 37 CFR § 1.132

HONORABLE COMMISSIONER OF PATENTS & TRADEMARKS

WASHINGTON, D.C. 20231

SIR:

1. I, Hiroshi Takei, a citizen in Japan, residing at Annaka-shi, Gunma-ken, Japan, hereby state and declare that:

2. In March, 1972, I graduated from Hijiribashi College of Technology.

3. In April, 1972, I entered the employment of Shin-Etsu Chemical Co., Ltd., and since 1985, I have engaged in research and development on silicone processed products.

4. I am one of the joint inventors of the above-identified patent application, I am well versed in the invention claimed and disclosed in the specification of the present application, and I understand both the Japanese and English languages.

5. The following experiments were performed by me or under my control and/or supervision:

In order to show that the use of a silicone compound-based adhesion imparting agent with at least one functional group selected from the group consisting of epoxy groups, alkoxy groups, vinyl groups and the group represented by the formula Si-H in a composition for forming a synthetic rubber layer results in unexpectedly good improvement in adhesion as compared to the composition disclosed in Okami et al. (US Patent 6,074,963) which does not contain said silicone compound-based adhesion imparting agent, I conducted Comparative Experiment.

Comparative Experiment

One hundred (100) weight parts of a dimethylpolysiloxane, which contains 5 mol % of methyl vinyl siloxyl units and having terminals blocked with trimethyl siloxy groups (viscosity: 4000 cSt) and 370 weight parts of aluminum oxide (Almina AS -30, trade name, manufactured by Showa Denko, Ltd.) were kneaded at 150°C for 2 hours. After the obtained kneaded product was cooled to room temperature, 0.3 weight part of chloroplatinic acid complex with vinyl siloxane (platinum content: 1 weight %) and 0.015 weight part of ethynyl cyclohexanol were added to the kneaded product and the resulting mixture was mixed until it became uniform. A liquid addition curing type organopolysiloxane composition was prepared by mixing 4.8 weight parts of methyl hydrogen polysiloxane expressed by the following formula:



with said mixture until the resulting mixture became uniform.

The resulting composition was applied to the both surfaces of aromatic polyimide-based film (brand name: Kapton 100H, manufactured by DuPont-Toray Co., Ltd., thickness: 25  $\mu\text{m}$ ) and the polyethylene naphthalate-based film (brand name: Teonex, manufactured by Teijin DuPont Film Ltd., thickness: 25  $\mu\text{m}$ ) used in Example 1 and Example 3, respectively, of the present application in the same manner as in Example 1 of the present application to give heat conductive silicone rubber composite sheets. The resulting composite sheets were measured for adhesive strength according to the method described on pages 16, lines 1-5 of the present specification.

The results are shown together with the adhesive strength each of the composite sheets of Examples 1 and 3 of the present application in Table A given below.

Table A

Substrate	aromatic polyimide-based film		polyethylene naphthalate-based film	
Silicone composition	Example 1 of the present application	Example 1 of Okami et al.	Example 1 of the present application	Example 1 of Okami et al.
Adhesive strength (N/cm)	39.2	0 (not adhered)	41.2	0 (not adhered)

6. As shown in Table A, the silicone composition of Example 1 of the present application is markedly superior to the silicone composition of Example 1 of Okami et al.

with regard to the adhesive strength to the aromatic polyimide-based film and polyethylene naphthalate-based film. Since Okami et al. is silent about the use of the silicone compound-based adhesion imparting agent specified in claim 1, the improvement shown by Examples 1 and 3 of the present application is unexpectedable from Okami et al. Thus, the present invention is not obvious over Okami et al.

7. I, the undersigned petitioner, declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001, of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

8. Further deponent saith not,

Hiroshi Takei  
Hiroshi Takei

August 02. 2007  
August .02 .2007